THE NEED TO HANG TOGETHER

LOW-COST NETWORK CENTRIC CAPABILITY: A DEEPWATER MODEL FOR INTERNATIONAL NAVIES AND COAST GUARDS

At a time when the maritime nations of the world contemplate the very real risk of asymmetric terrorist attacks emanating from the oceanic global commons, it is worth recalling the words of Benjamin Franklin on the eve of the U.S. War of Independence. Counseling his countrymen regarding the need for the American colonies to unite for a common cause some 230 years ago, he observed, "We must hang together, gentlemen ... else, we shall most assuredly hang separately." The words of this distinguished man of many talents could well apply today to the imperative for even closer cooperation between the world's Navies and Coast Guards in our increasingly interconnected, networked, and interdependent world. In the face of a global terrorist threat that seeks not only to challenge our democratic freedoms and way of life, but the economic underpinnings of our societies as well, it is encouraging to observe how the maritime community of nations has forged new levels of coordination and collaboration since 9/11 to counter a common threat. Should this same spirit extend to the necessary modernisation and recapitalisation of those Navies and Coast Guards charged to protect the security of their homeland and safety of their citizens? Can the U.S. Coast Guard's Integrated DEEPWATER System, with its system-of-systems goals to maximise operational effectiveness at the lowest total-ownership cost, serve as a model for other Navies facing a need to align their forces for 21st-century operational requirements? Is there is a place for small Navies in the world of network-centric warfare? The answer to each question, in my view, is a firm, "YES"!, and the heightened degree of international interest in the DEEPWATER Programme suggests this opinion is shared in many quarters around the globe.

A TWO-PRONGED STRATEGY

When the DEEPWATER Programme was first framed conceptually 10 years ago, its founding fathers recognised that a cost-effective solution must be developed that would **provide the Coast Guard with a network-centric system** composed of robust C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance), modern air and surface platforms encompassing both upgraded legacy and well as new platforms, and a new paradigm for acquisition strategy.

The U.S. Coast Guard's experience in addressing the urgent need to recapitalise its inventory of patrol boats, cutters, aircraft and supporting systems to meet 21st Century operational requirements is instructive.

Our situation today bears a striking resemblance to conditions faced by many Navies around the world. With an average age of more than 30 years, the U.S. Coast Guard's fleet of high and medium endurance cutters is older than all but *two* of 39 worldwide naval fleets of similar size and mission. This ageing and increasingly obsolete inventory of aircraft, cutters, and systems jeopardizes the Coast Guard's future ability to perform its multiple missions in such areas as maritime homeland security, national defence, the marine environment, and maritime safety.

At a time when mission demands are growing, our legacy assets (which are approaching block obsolescence by the end of this decade) are less reliable, more difficult to maintain and repair, and more expensive to operate. The Coast

Fig. 1: A key component of the U.S. Coast Guard's DEEPWATER Programme is a common approach to provide robust systems for command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) for sea, air, and shore assets. Lockheed Martin's new Maritime Domain Awareness Center at company facilities in Moorestown, N.J., is the focal point for developing, integrating, and testing all C4ISR systems destined for both legacy and new DEEPWATER assets.
(Photo: Courtesy of Lockheed Martin Maritime Systems & Sensors, provided by Gordon I. Peterson

Guard is tackling these challenges with a two-pronged strategy.

Past Coast Guard acquisition programmes – based largely on the one-for-one replacement of hulls and airframes – have resulted in sub-optimised interoperability in critical command-and-control capabilities. Yet, as combat operations in Afghanistan and Iraq demonstrate vividly, **seamless C4ISR is the *sine qua non* for success** in the netted battlespace of the 21st Century.

The Integrated DEEPWATER System (IDS), conceived several years before the terrorist attacks of 9/11, will redress the Coast Guard's current dilemma. When fully implemented, the DEEPWATER programme will consist of three classes of new cutters and their associated small boats, a new and upgraded fixed-wing manned aircraft fleet, legacy helicopters upgraded and converted to serve as multi-mission platforms, both cutter-based and land-based unmanned aerial vehicles (UAVs), and enhanced systems for C4ISR and integrated logistic support.

EFFECTIVE RISK MANAGEMENT

DEEPWATER's C4ISR system warrants special mention. It will lead to more effective risk management, intelligence fusion, and more productive force employment in all Coast Guard mission areas. The Coast Guard's reliance on a capabilities-based system design was based on broad C4ISR requirements established for the IDS contract award:

- *Surveillance, detection, and monitoring:* Be capable of determining what and whom resides, enters, and exits ... in the DEEPWATER area of operational responsibility;
- *Internal information exchange:* Maintain simultaneous real-time voice, video, and data communications between all Coast Guard assets;
- *External information exchange:* Maintain simultaneous real-time voice, video, and data communications with the Department of Defense, other federal agencies, state and local government, NATO and similar coalitions; and
- *Situational awareness:* Maintain awareness of the operating environment, to include fusion of local tactical information with database information in near-real time.

Rear Adm. Patrick M. Stillman, U.S. Coast Guard, became the fi Programme Executive Officer f the Integrated DEEPWATER Sy

DEEPWATER **C4ISR capability improvements** – including improved sensors and systems to collect and transmit data and information – will give operational commanders the tools they need to develop better situational awareness and a common operating picture. This will lead, in turn, to higher levels of maritime domain awareness (comprehensive information, intelligence, and knowledge of all relevant entities within the U.S. maritime domain, and their respective activities, that could affect U.S. security, safety, economy, or environment).

A common C4ISR architecture and software implementation across DEEPWATER's surface and aerial platforms will reduce operational costs and accommodate an imbedded 'technology refresh' capability to obviate obsolescence in the future. Tactical data from DEEPWATER platforms will be integrated into a common operating picture, and timely and secure data exchange will be ensured by satellite communication data links,available '24/7'. Sensor integration will be achieved on all assets through correlation of specific data and fusion into the common operating picture.

DEEPWATER's C4ISR approach is already producing results at sea following upgrades installed at shore stations and on the Coast Guard's medium and high endurance cutters over the past two years. Ashore ***(see figure 1)***, DEEPWATER's **C4ISR shore-side** upgrade was completed in 2004 at the Communications Area Master Station Pacific (CAMSPAC) facility at Point Reyes, Calif. The first shore-based IDS communications upgrade was completed in 2003 at Communications Area Master Station Atlantic (CAMSLANT).

At sea *(see figure 2)*, C4ISR upgrades now allow cutter crews to maintain a common operational picture and higher levels of maritime domain awareness through the first-time use of a classified Local Area Network and the Secure Internet Protocol Router Network (SIPRNET). These provisions have been revolutionising the world of work for cutter crews, because they afford access to real-time intelligence information and Department of Defense satellite imagery during current operations, as well as increased speed and size of transmission

through compressed bandwidth capability.

Late last year, crews on the Coast Guard Cutters "Gallatin" *(see figure 3)*, "Rush", and "Thetis" collectively seized more than 33,949 pounds of cocaine during law-enforcement deployments – continuing the Coast Guard's record-setting pace established during fiscal year 2004 when 240,518 pounds of cocaine were seized (shattering the previous record of 139,000 pounds interdicted in 2001). DEEPWATER communication upgrades and previous enhancements installed on these ageing legacy cutters played a major contributing role in their success, because the operations involved multiple cutters, federal agencies, and foreign countries – mandating seamless connectivity and high levels of interoperability between all participants.

DEEPWATER's **network-centric C4ISR architecture** will contribute to improved maritime domain awareness through its provisions for disseminating shared tracks and real-time data streams, on-line intelligence, robust and seamless connectivity with continuous coordination, stand-alone capabilities, a combination of active and passive sensors, expanded surveillance and detection areas, and improved communications with all federal agencies and merchant shipping.

TAKING AIM ON DECLINING READINESS

"The Integrated DEEPWATER System is the enduring solution to both the Coast Guard's declining legacy asset readiness concerns and the need to implement enhanced maritime security capabilities to reduce maritime risk in the post-9/11 world", said Adm. Thomas H. Collins, Commandant of the Coast Guard, during congressional budget testimony on Mar. 3. Adm. Collins described how the DEEPWATER's 2006 budget would take aim on reversing the Coast Guard's declining readiness trends and transform the Coast Guard with enhanced capabilities to meet current and future mandates through system-wide recapitalisation and modernisation of Coast Guard cutters, aircraft, and associated systems.

Today's alarming system-failure rates, increased maintenance requirements, and the subsequent impact on mission effectiveness all underscore the operational imperative to do so with a due sense of urgency.

During the past fiscal year, for example, in-flight engine power losses for the Coast Guard's HH-65 helicopter occurred at a rate of 329 mishaps per 100,000 flight hours – up from a rate of 63 mishaps per 100,000 flight hours during FY 2003. The comparable Federal Aviation Administration acceptable standard for a mishap of this severity is approximately 1 per 100,000 flight hours. The engine loss rate has resulted in flight and operational restrictions and high levels of risk to our aircrews. DEEPWATER's **re-engining of the HH-65** is the Coast Guard's highest priority for legacy-asset modernisation *(see figure 4)*.

Surface forces demonstrate similar deterioration, mainly because they have entered the final "worn-out" phase in their service life. The 110-foot patrol boat fleet has experienced 23 hull breaches requiring emergency dry docks. The loss in operational days is unsustainable and risks to personnel are unacceptable. The Coast Guard's high and medium endurance cutters also are experiencing failures due to old and unserviceable systems.

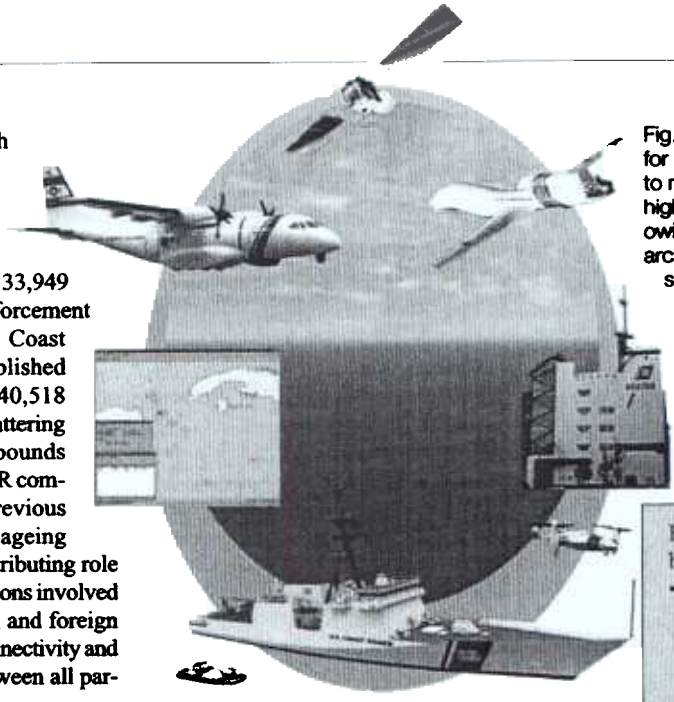


Fig. 2: The DEEPWATER Programme's system for command and control will allow cutter crews to maintain a common operational picture and higher levels of maritime domain awareness owing to its network-centric system architecture linking U.S. Coast Guard air and surface platforms with command centres ashore and, owing to its improved levels of interoperability, to other branches of the U.S. armed forces and law-enforcement agencies. (Graphic: Courtesy of U.S. Coast Guard Graphic / Rich Doyle, provided by Gordon I. Peterson)

President Bush's FY 2006 DEEPWATER budget request of US$966M will enable:

- Acquisition of a third EAGLE EYE Tilt Rotor Vertical-Takeoff-and-Landing Unmanned Aerial Vehicle (VUAV), including mission sensor packages and ground control technology to use them;
- Accelerated re-engining of HH-65 helicopters;
- Service-life extension, avionics, and radar upgrades for HH-60 helicopters and HC-130H aircraft;
- Procurement of long-lead material for and production of the third National Security Cutter;
- Completion of design and procurement of the long-lead material for the first Offshore Patrol Cutter, five years ahead of the original schedule;
- Testing and evaluation of the first Fast Response Cutter, 10 years ahead of original schedule; and
- Service-life extension and electronics upgrades for 10 legacy Medium Endurance Cutters.

A MORE READY COAST GUARD

Increased FY 2006 funding for DEEPWATER assets will result in capability improvements for maritime homeland security missions and sustain operational effectiveness in all of the Coast Guard's military, multi-mission, and maritime responsibilities – directly supporting the Coast Guard's overarching FY 2006 budget goals to recapitalise, implement the *Maritime Strategy for Homeland Security*, and enhance mission performance.

DEEPWATER's more capable platforms and systems will make significant contributions to the Department of Homeland Security's strategic goals of threat awareness, prevention and protection against terrorist attacks, and response and recovery should they occur.

As converted or new DEEPWATER platforms enter service, they will reduce maritime security risks and help to close today's capability gaps by strengthening 'smart borders' and protecting U.S. ports, waterways, and coastal areas. DEEPWATER enables a layered, defence-in-depth maritime security strategy using 21st Century technologies.

REVISED IMPLEMENTATION PLAN APPROVED

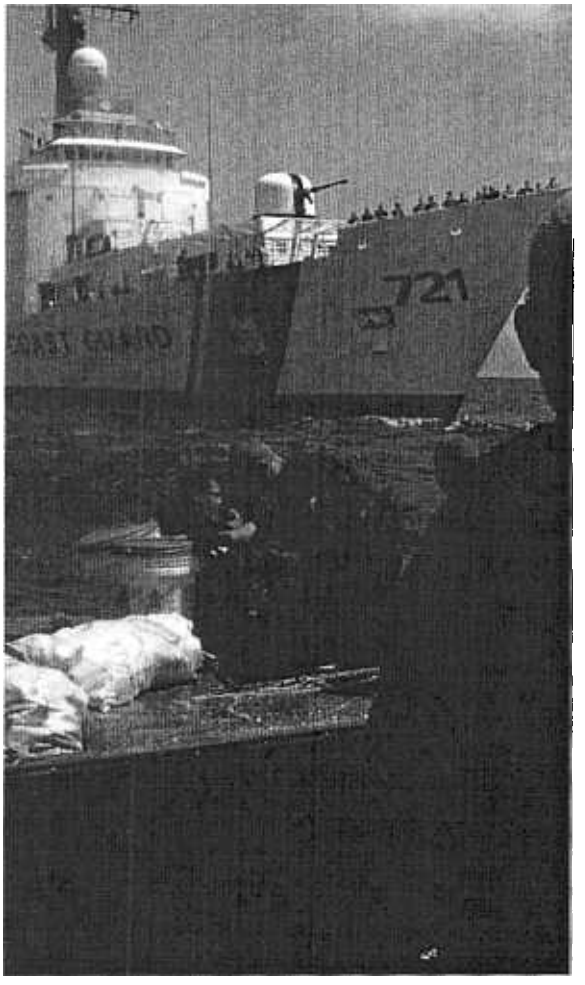
The recently approved revisions to the DEEPWATER Mission Need Statement and Implementation Plan were developed following a comprehensive, year-long performance-gap analysis of the Coast Guard's post-9/11 mission requirements completed last year. Although DEEPWATER C4ISR upgrades have improved performance on select platforms, today's Coast

NATIONAL SECURITY CUTTER (NSC)
SHIP CHARACTERISTICS CUTTER DIMENSIONS

Length:	418 feet
Displacement:	4,300 tons
Speed:	28 knots (nautical miles per hour)
Range:	12,000nm
Endurance:	60 days
Aircraft:	(2) HH-60/HH-65 helicopters, or (4) VUAVs
Boats:	(2) LRI and (1) SRP, stern launch ramp and davit system
Crew (max):	18 (Officer), 130 (Enlisted)
Armament:	57mm gun and Automatic Gunfire Control System Close In Weapons System, SLQ-32 Electronic Warfare System, SRBOC/NULKA countermeasures chaff/rapid decoy launcher Specific Emitter Identification (SEI) Sensor System that identifies other boats by their unique noise and radio waves.
Propulsion plant:	Twin screw combined diesel and gas (CODAG) with two 9,655HP medium speed diesel engines, and one 30,565bhp gas turbine engine Propellers turn at 231rpm Controllable pitch propellers at 14ft. diameter
Electric plant:	Three 1,360kW ship service diesel generator sets
Radar/electronics:	Surface search & navigation radars (X & S band) 3-D air search radar (EADS) Fire control radar (SPQ-9B) Electro-optical infrared sensor (MK-46) HF, VHF & UHF communications Radio direction finder C4ISR

Qualitative Description of Capability:
The Coast Guard designed the National Security Cutter to be the flagship of the fleet – capable of meeting all maritime security mission needs, and supportive of the joint Coast Guard/Navy commitment to Joint Service Combatant Commanders. The NSC contributes to *Intelligence Collection/Information Sharing* through a sophisticated S/SCIF, SEI sensors and increased data exchange bandwidth. The NSC's *Deepwater and DoD interoperability* capabilities are enhanced with *DHS-* and local responder interoperable radio communications. The NSC flight deck will grow to accommodate all variants of DHS and DoD HH-60 helicopters to provide enhanced interoperability with interagency and inter-service counter-terrorism teams. The NSC will now be fully integrated with the National Distress Response Modernization Program, known as RESCUE 21, which will provide the port commanders with real-time tracking of the NSC and seamless *Common Operational Picture/MDA* data sharing, including the Automated Identification System (AIS). The NSC *Anti-Terrorism/Force Protection* suite will include underwater sonar that will allow the cutter to scan ports, approaches, facilities and high-value assets for underwater, mine like devices and detect swimmers. The cutter's small arms mounts will be remote operated and fully integrated with the cutter's radar and infrared sensors such that the cutter and high-value assets under its protection can be protected from a USS "Cole"-like incident. The *Maritime Security Capabilities* allow cutter's weapons and command and control suite to be upgraded and hardened to better survive potential terrorist incidents and process increased data flow. This will include SRBOC/NULKA missile defense system with CIWS, SLQ-32, and a medium caliber deck gun (57MM) that will provide the ability to stop rogue merchant vessels far from shore. An integrated *CBRNE Detection and Defense* capability allows the NSC to remain on scene and operate in Weapons of Mass Destruction (WMD) scenarios.

SPECIFICATIONS ARE NOTIONAL ONLY / ACTUAL SPECIFICATIONS MAY VARY.



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(Photo: Courtesy of USCG PA2 Donnie
Brzuska, provided by Gord 1. Peterson)

Guard is largely outfitted with assets designed for the threat environment of 30 to 40 years ago. For this reason, it lacks many of the maritime-security and network-centric capabilities so essential for operational effectiveness in the 21st Century.

The revised DEEPWATER Implementation Plan provides an affordable, post-9/11 solution to resolve the Coast Guard's dual challenges of legacy-asset deterioration and operational performance gaps. The revised plan updates the original DEEPWATER roadmap by modifying the original assets that would have been delivered by the DEEPWATER project to incorporate improved post-9/11 capabilities; retaining, upgrading, and converting aviation legacy assets (C-130s, H-60s, H-65s) as part of the DEEPWATER Programme's final asset mix; and advancing the delivery of the Fast Response Cutter and Offshore Patrol Cutter by 10 and five years to 2007 and 2010, respectively.

In addition to delivering more capable operating assets for the Coast Guard's post-9/11 transformation to support DHS strategic goals and to reduce maritime security risk, the revised plan will enable the DEEPWATER Programme to make more significant contributions to improved information sharing, collaboration, and interoperability in the maritime domain –essential capabilities to attain higher levels of maritime domain awareness.

Of note, the revised plan calls for the designs for cutters and aircraft in the DEEPWATER system of systems to incorporate **requirements for significantly improved capabilities** in many functional areas – **including an interoperable network-centric command-and-control system** (essential for maritime domain awareness), increased speed and integrated weapons systems on select cutters, helicopter airborne use of force and vertical insertion and delivery, improved fixed-wing aircraft long-range transport and surveillance, enhanced anti-terrorist and force protection, and detection-and-defence systems for chemical, biological, and radiological threats.

More-capable DEEPWATER cutters and aircraft will enable the Coast Guard to close existing operational shortfalls so it may execute its full range of missions far more effectively. The revised plan also provides for the progressive sustainment, modernisation, and conversion of ageing legacy assets as we transition to a recapitalised fleet.

Since the DEEPWATER Programme now will deliver more capable assets under its revised plan, it follows logically that its **performance-based acquisition strategy may result in fewer assets** when the system is built out. Time wil tell. That is why the revised plan projects a rang of assets for the final force levels of two class es of cutters and some aircraft.

DEEPWATER's aviation mix, for example was adjusted owing to new post-9/11 operation al requirements. The AB-139 helicopter, a pro

More Capable Functional Requirements

The revised DEEPWATER Implementation Plan incorporates more capable functional requirements outlined in an updated post-9/11 DEEPWATER Mission Need Statement, including:

- An *innovative, interoperable network-centric system* for C4ISR improvements to harness the power of an interoperable network to improve performance in all mission areas to *improve maritime domain awareness and provide a common operational picture* – key to Coast Guard leading the inter-agency effort to know and respond to maritime conditions, anomalies, vulnerabilities, and threats. Improvements to C4ISR enable *earlier awareness* of events through the more effective gathering and *fusing* of terrorism-related information, analysis, coordination, and response – all critical to detecting, deterring, and defeating terrorist attacks. Upgrades to DEEPWATER surface assets, for example, contribute directly to improved intelligence collection and fusion through a sophisticated Shipboard Sensitive Compartmentalised Information Facility (S/SCIF), sensors, and increased data-exchange bandwidth;
- Improved maritime-security capabilities such as increased speed and integrated weapons systems on selected DEEPWATER cutters essential to higher levels of maritime homeland security during a terrorist attack, opposed boardings, and other high-risk operations;
- Helicopter airborne use of force and vertical insertion and delivery capabilities to allow helicopters to provide warning and/or disabling fire, and to deploy, deliver, and recover boarding teams safely and more effectively;
- Improved fixed-wing aircraft long-range surveillance to increase MDA and reduce maritime patrol aircraft shortfalls in operating hours; organic Coast Guard air transport will be able to deploy Maritime Safety and Security Teams and National Strike Force teams faster for response with their equipment.
- Improved capabilities for anti-terrorist/force protection on select DEEPWATER assets with all-weather self-defence and the ability to protect high-value assets; assets will have the capability to engage terrorists with higher assurance of survivability and continued mission capability; and
- Improved asset capabilities for detection and defence for chemical-biological-radiological (CBR) threats – essential to survival and continued operations during a CBR attack involving a weapon of mass destruction.

THE FLAGSHIP OF THE COAST GUARD FLEE

BY PAC JEFF MURPHY, USCG INTEGRATED DEEPWATER SYSTEM

On March 29, senior U.S. Coast Guard and industry officials laid the keel of the newest U.S. weapon in the war on terror, the first National Security Cutter (WMSL 750), during a ceremony at Northrop Grumman Ships Systems Ingalls Shipyard in Pascagoula, Miss. The multi-mission cutter is being built by Integrated Coast Guard Systems, a joint venture between Northrop Grumman and Lockheed Martin Corporation, as part of the Coast Guard's Integrated DEEPWATER System modernisation and recapitalisation programme.

Guest speakers included Secretary of Homeland Security Michael Chertoff and his wife, Meryl; Mississippi Gov. Haley Barbour; Sen. Thad Cochran, R-Miss.; Sen. Trent Lott, R-Miss.; Commandant of the Coast Guard Adm. Thomas H. Collins; Rear Adm. Patrick M. Stillman, Integrated DEEPWATER System programme Executive Officer; Dr. Philip Dur, President of Northrop Grumman Ship Systems; and Fred P. Moosally, President, Lockheed Martin Maritime Systems & Sensors.

"Today's ceremony marks a significant milestone in the history of the DEEPWATER programme and the transformation of the Coast Guard for its 21st Century missions," said Collins, as he addressed more than 300 invited guests, distinguished visitors and members of the media.

The construction of the National Security Cutter, 418-feet long and displacing 4,300 tons, is the centrepiece of the surface platforms in the Integrated DEEPWATER System's system of systems. The cutter will be the largest and most technically advanced class of cutter in the Coast Guard.

"The National Security Cutter is designed to be the flagship of the Coast Guard fleet," said Sen. Cochran, Chairman of the Senate Appropriations Committee. "It features helicopters, inflatable boats, and secure communications."

"We've got to make sure we have what we need to protect [and defend] our shores, our ports, and our harbors," said Sen. Lott.

"This National Security Cutter, the keel of which we lay today, is a visible symbol of the new generation of equipment that we are going to provide to the men and women of the Coast Guard," said Secretary Chertoff, principal speaker at the keel-laying ceremony. "Importantly, this cutter is not just a ship, but it is an integrated system – a system that is designed to perform in the defence of this country. In a way, that's emblematic of the DEEPWATER programme itself, which is not simply a collection of individual assets, cutters, ships and aircraft, but is part of a capability … part of a performance-based effort designed to deliver a result, a successful mission of protecting these United States.

"As you build this cutter you are demonstrating that your goals and those of the Department of Homeland Security are the same: operational efficiency, first in class excellence, and extraordinary service," said Chertoff. "You have chosen embod ities."

Mrs. Meryl J. Chertoff, the sponsor of the U.S. Coast Guard's first in class NSC cutter, authenticated the laying of the keel. "As sponsor, I have to be the mother of this ship. Let's hope that will be easier than being the mother of two teenagers.

"As I stand here today, seeing how the DEEPWATER fleet is getting built by such a talented team, I look forward to the day when American families can rest a little easier knowing that the men and women of the Coast Guard are running missions up and down the coasts of the nation in this fine ship," she said.

The keel-laying ceremony is the long-recognised maritime tradition of laying down the backbone of a ship, and in modern times has come to represent the traditional start-of-construction milestone. During the authentication, Adm. Collins and Mrs. Chertoff traced their initials on the keel plate, signifying the keel of the first new DEEPWATER cutter has been "truly and fairly laid." Minutes later, Northrop Grumman Ship Systems welder L.W. "Billy" Ross permanently inscribed the initials into the keel.

"This shipyard is 'America's shipyard' because it is the most productive in America with the greatest workforce in America that produces the best product in the shipbuilding industry," said Barbour. "This shipyard has been the crown jewel of our state's economy, because the people that work here do their jobs so well; and because Northrop Grumman and our state have insured that the capital investments have been here."

"Today's keel laying ceremony is the culmination of countless hours of research, planning and commitment to making the National Security Cutter programme the pre-eminent national security asset in America's homeland security investment," said Dur. "We've planned for this ship to be the model for all first of class ships and it already is. The lead National Security Cutter the best first-time quality ship for a first in class that has ever been built here."

The ship represents the first major multi-mission cutter to be introduced to the Coast Guard in the past 25 years. The production contract for this first in class was awarded in June 2004, and the start of fabrication occurred in September last year.

"Integrated Coast Guard Systems is delivering to the men and women of the Coast Guard the tools they need to get their job done," said Moosally. "Our entire team is committed to the Coast Guard's success. This includes our colleagues in the shipyards … at test facilities … and at Coast Guard facilities around the nation."

Northrop Grumman Ship Systems is leading the production effort. Lockheed Martin also plays an important role, with its work focused primarily on the cutter's command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) capabilities.

The first National Security Cutter is scheduled to be delivered to the Coast Guard in the spring of 2007. The contract for construction of the second National Security Cutter was signed in January and calls for a total of eight National Security Cutters to be constructed in this programme.

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posed future platform, was determined not to possess the space necessary to transport six-member boarding teams for vertical insertions to ships at ranges up to 200 nautical miles from a cutter or shore station. **H-60 helicopters** are suitable, however, and they offer the added merit of allowing the Coast Guard to operate aircraft common to the other armed forces. Similarly, **additional long-legged C-130 aircraft** ***(see figure 5)*** were judged necessary for new organic transport requirements (for security teams, port security units, and the National Strike Force) on both U.S. coasts as well as for air surveillance in the Pacific region.

The future determination of the precise number of assets we acquire will not be made until there is a suitable opportunity –some years from now – to evaluate each platform's performance, DEEPWATER's **system-of-systems performance**, and the existing threat environment. As the Coast Guard's report to Congress on the revised plan states, the final number of assets will, at a minimum, be sufficient to meet Department of Homeland Security and Coast Guard long-range performance goals.

For this reason, a range of funding (US$19BN to US$24BN) and time (20 to 25 years) has been estimated to complete the acquisition. When, at some future date, the Coast Guard and Department of Homeland Security determine how well the programme satisfies its performance-based requirements, it may be possible to execute the acquisition at lower spending and force levels. If not, the opportunity is already in place to increase the number of DEEPWATER platforms to add the capacity necessary to achieve performance goals.

Fig. 4: The Coast Guard's top priority for legacy asset sustainment is to complete the re-engining of HH-65 DOLPHIN helicopters under the DEEPWATER Programme. Modified engine cowlings on this newly painted HH-65 signal it has completed its re-engining.
(Photo: Courtesy of U.S. Coast, provided by Gordon I. Peterson)

THE POWER OF PARTNERSHIPS

Turning from DEEPWATER's technical considerations to the desirability of greater collaboration in maritime security affairs at home and abroad, strong partnerships are an important thrust in DEEPWATER's acquisition strategy. New levels of public-private cooperation with DEEPWATER's systems integrator, Integrated Coast Guard Systems (a joint venture between Lockheed Martin and Northrop Grumman), allow us to draw on its vast experience in designing and developing market-edge systems that strike an appropriate balance between capability and affordability.

As one of the five branches of the U.S. armed forces, the Coast Guard strategy for DEEPWATER also is guided by its historically close relationship with the U.S. Navy.

The *National Fleet Policy Statement*, originally signed in September 1998, codifies this relationship. In July 2002, Chief of Naval Operations Adm. Vern Clark and Adm. Collins reaffirmed and updated the agreement to ensure both services work together to synchronize our multi-mission platforms, infrastructure, and personnel to provide the highest level of naval and maritime capability for the nation's investment.

This partnership allows an effective two-way flow of capability to meet both expeditionary and domestic-security imperatives. One provision of the policy stipulates "...all ships, boats, aircraft, and shore command-and-control nodes of the National Fleet will be interoperable to provide force depth for peacetime missions, homeland security, crisis response, and wartime tasks."

Mindful of this guidance, my counterpart in the Department of the Navy (Rear Adm. Charles Hamilton II, Programme Executive Officer, Ships) and I signed a Memorandum of Understanding in 2002 and formed a working group to specify common technologies, systems, and processes critical to both the Navy's future Littoral Combat Ship and the design and development of DEEPWATER's cutters. This Navy-Coast Guard cooperation reflects our awareness that there are necessary and unavoidable transformational intersections where each of our service's operational requirements overlap.

Similar cooperative DEEPWATER agreements have been made with the Naval Air Systems Command and the Marine Corps Systems Command.

U.S. COAST GUARD LOW-COST NETWORK CENTRIC CAPABILITY

Tomorrow's U.S. Navy's network-centric capability will reside in **FORCEnet** and systems like **Cooperative Engagement Capability**. They offer the Navy the means to transition to a 21st Century force that can share digital tactical information and sensor data seamlessly between ground, air, space, surface, and submerged platforms despite broad geographic separation across an operational theatre.

The **Coast Guard** faces a similar requirement, and it is this network-centric vision that motivates the design and development of a DEEPWATER C4ISR system that will allow Coast Guard surface platforms to serve as nodes for shared information and operational knowledge with command centres ashore – a potent force multiplier critical to improved maritime domain awareness. DEEPWATER's incremental C4ISR approach to improve Coast Guard maritime domain awareness will complement the Navy's FORCEnet initiative.

Just as FORCEnet will transform the Navy's operational capabilities by enabling more rapid decision-making and massed warfighting

Fig. 5: A U.S. Coast Guard C-130H long-range surveillance aircraft from Air Station Sacramento, Calif., soars over the clouds near the Golden Gate Bridge on a foggy San Francisco afternoon following a law enforcement patrol in the Eastern Pacific in 2004. The number of C-130 aircraft projected for the DEEPWATER Programme will increase to 22 under the revised DEEPWATER Implementation Plan owing to new air-transport requirements and the importance of the platform's extended range for maritime surveillance.
(Photo: Courtesy of USCG / PA2 Barry Lane, provided by Gordon I. Peterson)

effects, **DEEPWATER's interoperable C4ISR system** will provide the means to communicate information and data quickly and securely between Coast Guard assets, the Department of Homeland Security, the Navy; other federal, state, and local agencies; and our international partners.

FRIENDS AROUND THE WORLD

And what of the U.S. Coast Guard's many friends around the world? Faced with a widening gap in technical capabilities, they cannot dismiss out of hand the concern that the U.S. Navy's FORCEnet capabilities may ultimately result in more unilateral U.S. operations. Recent history, however, suggests that there are powerful incentives for the United States and its allies to develop compatible Navies and to **reach agreement on the means to share sensitive information in a networked coalition force** of ships and aircraft.

The United States and its partners in NATO have a long history of such cooperation, and this common purpose is demonstrated daily during humanitarian, counter-drug, counter-terrorism, and expeditionary operations. During Operation IRAQI FREEDOM, for example, 65 ships from coalition nations joined 175 U.S. Navy ships and U.S. Coast Guard cutters assigned to the U.S. Fifth Fleet. This operation was patterned on similar cooperation demonstrated during combat operations in Afghanistan in 2001 and 2002.

For its part, the U.S. Coast Guard encourages **foreign partnering opportunities** through its DEEPWATER International Office, the programme's arm for international engagement and Foreign Military Sales (FMS). This office serves as an important link between the overall U.S. Coast Guard acquisition effort and the overseas community. The ultimate goals are to achieve heightened cooperation and interoperability with U.S. allies, increased efficiency of acquisition, and worldwide visibility of the technological superiority in maritime domain awareness that the DEEPWATER Programme will bring to the 21st Century.

In recent years, the **IDS International Office** has provided information to educate numerous prospective international customers and the security-assistance community. The DEEPWATER staff continuously studies potential foreign markets for DEEPWATER system and subsystem applicability. To this end, the staff works closely with defence attachés, embassy personnel, and security assistance officers.

In addition to promoting the DEEPWATER System's platforms and systems through foreign military sales, the IDS International Office focuses on **building partnerships throughout the security assistance community**. The DEEPWATER Office is presently working, for example, with the Director of Security Assistance and Arms Transfers in the Department of State. In the Department of Defense, the office works directly with the Defense Security Cooperation Agency (DSCA) and the U.S. Navy International Programmes Office (Navy IPO).

DEEPWATER International effectively leverages a Memorandum of Understanding between Navy IPO and the International Affairs Office (G-CI) at U.S. Coast Guard headquarters in Washington, D.C., to pursue security assistance opportunities worldwide. G-CI is the nexus for international affairs policy guidance at Coast Guard Headquarters, and it provides DEEPWATER with superb support. When briefing security assistance officers at annual meetings hosted by the unified U.S. combatant commands, for example, the International Affairs Office and DEEPWATER staff officers use a team approach to derive mutual benefits.

The DEEPWATER staff maintains close ties with the Navy IPO for the explicit purpose of advocating the **international market potential of the Coast Guard's IDS system of systems**. As the lead implementing agency for maritime security assistance and associated support, Navy IPO functions as DEEPWATER's proponent in pursuit of foreign military sales opportunities. Interested nations route all international queries, informal "Requests for Information/Proposal (RFI/RFP)," and formal "Letters of Request" (LOR) directly to Navy IPO.

After appropriate review of the request for releasability and technology-transfer issues,

Navy IPO tasks the IDS International Office to provide information, pricing, and availability (P&A) data and/or technical input to the U.S. Government Letter of Offer and Acceptance (LOA) that will formally offer the requested DEEPWATER system, subsystem, or asset to the requesting government. This relationship with Navy IPO provides the U.S. Coast Guard with the appropriate Department of Defense conduit for successful execution of FMS functions that will eventually help to reduce overall costs in the DEEPWATER acquisition through increased production runs and economies of scale.

The Department of Commerce and the DEEPWATER International Office have signed an agreement with the Bureau of Industry and Security (BIS), under which **BIS promotes DEEPWATER platforms to maritime forces around the world**. BIS, in cooperation with the U.S. Trade and Development Agency, is exploring unique avenues to develop country and region-specific business plans.

The Department of Commerce and the DEEPWATER International Office also are working in tandem with the U.S. Export-Import Bank. Due to the Coast Guard's unique role as a multi-mission military service and law-enforcement agency, we see a real potential for many of the DEEPWATER platforms and subsystem components to be acquired by our allies through non-defence related loans guaranteed by the U.S. Export-Import Bank.

Many challenges exist if smaller Navies around the world are to reverse their shortfalls in recapitalisation by making suitable investments in network-centric systems. A failure to transform their forces in ways comparable to the U.S. Navy and its smaller partner, the U.S. Coast Guard, however, is *not* a feasible alternative. **Antiquated platform-centric Navies –large or small – will be relegated to operational irrelevance.**

The U.S. Coast Guard's **Integrated DEEPWATER System provides smaller Navies a model for recapitalisation that will meet the demands of today's network-centric operations – and at an affordable cost.**

"NO MORE IMPORTANT MISSION"

Nearly three years ago, President Bush said, "The U.S. Government has no more important mission than protecting the homeland from future terrorist attacks". Secretary of Homeland Security Michael Chertoff's approval of major revisions to the DEEPWATER Programme reflects his personal commitment to this vital task. When he assumed his duties as the Coast Guard's Service Secretary in a ceremony in March, Secretary Chertoff pledged his duty to ensure the Coast Guard continues "... to receive the support, the technology and the resources you need to carry out the implementation of our maritime strategy, one that is layered, one that is aggressive, and one that is comprehensive in its approach to stopping and defeating our enemies." Backed by the strong support of the Department of Homeland Security, the Bush administration, and the Congress, the DEEPWATER Programme's new roadmap offers a real opportunity to make a significant investment in attaining these goals. NAFO